

AIR COMMAND AND STAFF COLLEGE  
AIR UNIVERSITY



**On the Wings  
of the White Eagle**

**Poland's Air Force Reform and  
Modernization, 1989-2001**

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## **Foreword**

It is my great pleasure to present another of the *Wright Flyer Papers* series. In this series, Air Command and Staff College (ACSC) recognizes and publishes the “best of the best” student research projects from the prior academic year. The ACSC research program encourages our students to move beyond the school’s core curriculum in their own professional development and in “advancing air and space power.” The series title reflects our desire to perpetuate the pioneering spirit embodied in earlier generations of Airmen. Projects selected for publication combine solid research, innovative thought, and lucid presentation in exploring war at the operational level. With this broad perspective, the *Wright Flyer Papers* engage an eclectic range of doctrinal, technological, organizational, and operational questions. Some of these studies provide new solutions to familiar problems. Others encourage us to leave the familiar behind in pursuing new possibilities. By making these research studies available in the *Wright Flyer Papers*, ACSC hopes to encourage critical examination of the findings and to stimulate further research in these areas.



RONALD R. LADNIER  
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## ***Preface***

As a student in early 2000 at the Defense Systems Management College (DSMC), Ft. Belvoir, Virginia, I became interested in understanding how the newest North Atlantic Treaty Organization (NATO) members procured weapons systems. I wondered how they would transform their former Warsaw Pact militaries and weapons systems to contribute to the NATO alliance. I centered my research on Poland, which I admired first for its Solidarity movement that toppled the Soviet-controlled establishment, and secondly, because Poland strongly supported NATO membership. Did the country with the greatest will to be a strong NATO member have a good plan to modernize its military? Using research opportunities at DSMC, I found there was a void of information about Poland's acquisition and modernization processes—no formal processes existed. This led me to dig deeper for answers as an Air Command and Staff College (ACSC), Maxwell AFB, Alabama, student during academic year 2000–2001.

I owe thanks to my research advisor Dr. Matthew Schwonek, ACSC, for helping me focus my research and giving me fine doses of encouragement during the writing of the paper. I could not have completed this paper without outstanding Air University librarian Diana Simpson, who quickly and cheerfully responded to my numerous requests for information. Lt Col (P) Peter Podbielski, United States Army, chief, Office of Defense Cooperation, American Embassy in Warsaw, Poland, offered plenty of first-hand insight into the Polish air force's journey of modernization and reform. He is the real expert in this area and has my admiration for charting a potential acquisition process for the Polish military. Finally, I thank Dr. Richard Muller, ACSC, for reviewing my paper and suggesting improvements. I give my sincere appreciation to all.

## ***Abstract***

In 1989 years of Soviet control over political, economic, and military systems had left Poland unprepared to significantly contribute to NATO. However, Poland accepted the challenge of building a capable air arm for NATO as it began to reform its political system, modernize its air force, and strengthen its economic system to support air force modernization. This research paper analyzes Poland's progress in implementing these reforms and is grounded in three themes: (1) the political progress of reforming the civil-military structure, (2) the economic progress of reforming Poland's defense budget and defense industry to support air force modernization and, (3) the military's progress in modernizing its air force weapons. This study does not provide specific solutions but instead gives a general understanding of the long road Poland has embarked upon to transform itself from a Soviet satellite into a valued, all-around NATO contributor.

Poland's attempts at political reform have mostly succeeded, whereas its economic reforms have failed to support air force modernization. Air force modernization is stymied behind a series of plans much too ambitious to be implemented within the country's unstable defense budget. Poland is, however, investigating more economical ways to modernize its air force such as leasing an interim modern-fighter capability. The speedy incorporation of Poland into NATO may be followed by years, if not decades, of continuing military and economic reform to lift Poland to the level of NATO partnership of which it dreams.

An afterword is included to inform readers of significant changes in Poland's defense posture and potential air force modernization between the time this paper was originally researched in 2001 and its publication in 2004.

## Introduction

The winds of change blew swiftly. The accession of three countries into NATO in March 1999 was an unprecedented Western welcome to the new democracies of the Republic of Poland, Hungary, and the Czech Republic. That the blanket of NATO protection now falls over these three countries is amazing considering that a little over 10 years ago, they were members of NATO's nemesis, the Warsaw Pact.

Unfortunately, the once-swift winds of change have slackened in bringing these countries up to NATO standards from a political, economic, and military perspective. The years the Soviets controlled the political, economic, and military systems have left these countries unprepared to contribute significantly to NATO. Poland, a proud country that has historically desired to be a contender on the world scene, willfully accepted the challenge of providing NATO with a strong air arm. In order to succeed, it began three critical tasks: (1) reforming its political system to embrace a balanced civil-military relationship; (2) modernizing its *Polska Wojska Lotnicze* (Polish air force) to contribute to NATO missions; and (3) strengthening its economic system to sufficiently support air force modernization.

The following analysis of Poland's progress in implementing these reforms to cement NATO membership is grounded in three themes: (1) the political progress of the civil-military structure as expressed in Poland's guiding documents such as its constitution and national security strategy; (2) the economic progress of Poland's defense budget and defense industry to support air force modernization; and (3) the military progress in modernizing its air force for NATO. This paper does not offer specific solutions but instead provides a broad brushstroke of the complex political, economic, and military issues surrounding Poland's contribution to NATO and its Western allies. The intent is to provide a general understanding of the long road Poland has traveled in its transformation from a Soviet satellite to a country determined to become a valued, all-around contributor to NATO. We owe this understanding to our new partner in an alliance that ensures peace and stability in Europe.

## **Poland's Politics, Economy, and Military in 1989**

Poland was one of the first Warsaw Pact countries to emerge from Soviet rule under which it had been chafing since the end of World War II. Polish citizens were never faint of heart in voicing their discomfort with the situation. In 1956, worker riots in the western city of Poznan forced the Polish government to direct the Soviet-led Polish army to restore order.<sup>1</sup> In 1970 the Poles expressed dissatisfaction with Communist government control by rioting over food prices.<sup>2</sup> Finally, the last blow to Soviet rule came in the early 1980s when a cohesive group of trade unions (Solidarity) led strikes in the country's industrial centers. The government declared martial law in December 1981 to restore order to the disrupted functions. The Polish Communist Party revealed its bankruptcy and relinquished its power to the Polish military, commanded by Gen Wojciech Jaruzelski, to enforce martial law.<sup>3</sup> The Communist Party was never able to regain its lost authority. Unprecedented "roundtable" discussions between Solidarity leaders and the Polish government opened the door to the collapse of Communism and military rule. The rise of democracy then followed with free Senate and limited *Sejm* (Polish parliament) elections in 1989.<sup>4</sup>

The end of the Cold War ended Soviet control of Poland and voided the Warsaw Pact. The newly elected Polish government, led by conservative president and 1983 Nobel Peace Prize recipient Lech Walesa, thus sought to realign itself with Western political, military, and economic systems to reinforce its independence. As Poland soon discovered, a country's political, military, and economic systems are intertwined. Fixing one of the systems requires the others to be aligned and healthy. In 1989 the three systems were extremely out of kilter with the Western styles and beliefs the Poles sought to emulate.

The new political situation was one never witnessed in Polish history. Although Polish "republics" had existed in the past, they were never true democratic republics. In the seventeenth century, the elite class enjoyed a *liberum veto* whereby a single representative to the parliament, or *Sejm*, could nullify a decision despite majority consensus.<sup>5</sup> Inter-

war parliaments were weak and did not always represent the values and concerns of the common citizen. In fact, Poles held the parliament, the state administration, and the judiciary system in low esteem.<sup>6</sup> Despite those feelings, the number of political parties grew during 1989–91 from one, the Polish Communist Party (PZPR), to almost 30.<sup>7</sup> It is unclear whether direction from a legislative branch with so many political parties can be anything but muddled and fragmented. Whatever the case, the Poles emerged from Communism politically challenged.

At the end of Communist rule, the military was a vestige of Soviet rule. Extremely politicized and unaccustomed to civilian control, it was flush with outdated Soviet weapons systems but limited in funds to employ and/or maintain them. Military doctrine under Soviet control was one of massive offensive forces and firepower pointing toward Central Europe to engage the Western threat.<sup>8</sup> In fact, the Polish army was the second largest in the Warsaw Pact with approximately 450,000 personnel.<sup>9</sup> The military also acted as an arm of the centralized political system to ensure Party control. Joseph Stalin set this doctrinal concept in motion when he purged the post-World War II Polish military and put a Soviet officer in control of the Polish army.<sup>10</sup> In addition to acting as chief of the armed forces, this Soviet officer also assumed the position of minister of defense. In Western regimes this is usually a civilian position that is established to maintain a system of checks and balances between the military and civil government.<sup>11</sup> This aspect of Communist-era doctrine allowed the Soviet government to quell the actions of the Polish populace aimed at toppling state government. This guidance culminated as the military enforced the 1981–83 martial law against the Solidarity uprising. At that time, the military became the ultimate political tool when the Communist *Sejm* elected General Jaruzelski as president. He became head of the military as well as the civilian executive body.<sup>12</sup> The Poles had to eliminate the strong political influence of the military in hopes of NATO accession.

Poland's economy reflected Communist control, requiring many reform measures to support a free market. It was solidly agricultural—dependent on the owners of small, outdated farms. The country's state-owned industries re-

lied on heavy, inefficient, smoke-belching factories such as steel and chemical manufacturing that were not automated or computerized.<sup>13</sup>

The in-place formal economy was divided into two distinctly different economies. An informal economy of bartering, hoarding, and under-the-counter transactions filled gaps left by the formal economy that was riddled with shortages. Swirling around this Soviet-based economy was the economic burden of an extensive social safety net common to Communist countries. Regardless of the damaging effect to the economy, the government provided shelter, employment, and health care to the Polish people.<sup>14</sup> Based on agriculture, inefficient industry, and rampant bartering, Poland's economy needed a strong dose of reform before it could fund the military transformation necessary for NATO accession.

In 2001 the government, a coalition of "post-Communists" from the Democratic Left Alliance (SLD) and Polish Peasant Party (PSL), was in the hands of Pres. Aleksander Kwasniewski and Solidarity Electoral Alliance (AWS) member Prime Minister Jerzy Buzek. This government has not shied away from pushing Poland's political, economic, and military reforms. Politically, it ratified Poland's 1997 constitution; militarily, it presided over Poland's 1999 accession into NATO; and economically, it eagerly pursued its next victory—membership into the European Union (EU) in 2003.<sup>15</sup>

## **The Proud Tradition of Polish Airpower**

Airpower in Poland was born before Communist control stifled the country. Its history is steeped in proud tradition and surprising prowess dating to a time before World War I when Poland was partitioned between Russia, Prussia, and the Austro-Hungarian Empire. As early as 1910, Poles from the Russian-controlled partition were completing pilot training in France.<sup>16</sup> World War I offered Polish pilots a chance to hone their combat flying skills and airmanship. The Poles flew aircraft donated by the French government as World War I drew to a close, and the partitioned Poland became the Republic of Poland.<sup>17</sup> Poland's

aviation-glory days peaked during World War II. Although the Germans overwhelmed the Polish air force in the early days of the Nazi invasion, Polish pilots based in France and then England flew throughout the war. These pilots flew over 105,000 operational sorties and destroyed 746 enemy aircraft.<sup>18</sup> Finally, during the Communist era, the Poles fell under the wings of the Soviets. As such, Polish military aviators trained in Soviet-designed aircraft to uphold the Warsaw Pact against the Western threat.

Tradition tells of not only a capable and sometimes outstanding air force but also an aviation industry suited to producing weapons systems of foreign designs. The earliest Polish aviation plants maintained only foreign-designed, foreign-built aircraft. In the early 1920s companies such as the Central Aviation Workshop, Warsaw, the Kraków Workshops, Kraków, and the Lwów Workshops, Lwów, found their niche by repairing imported Fokkers, Breguets, and Balilas aircraft.<sup>19</sup> By the mid-1920s, two Polish companies bought licenses for the French Potez and Hanriot aircraft, resulting in the production of a high-quality aircraft.

The budgetary drawdown typical of the interwar period hit the aircraft industry hard and resulted in cancelled orders. Subsequent consolidation of the private, independent factories and workshops resulted in nationalistic, government-controlled entities. Following World War II, the Soviets assumed control of Poland's aviation industry. By the early 1950s, Stalin effectively continued the tradition of limiting organic Polish military aircraft designs by halting all new Polish aircraft initiatives except for a Polish-designed trainer. Instead, Polish aircraft factories, renamed transport equipment manufacturing centers (WSK), focused on building Polish variants of another country's design. For example, WSK-Mielec built the LiM-5, a Polish variant of the MiG-17.<sup>20</sup> The Poles obtained licenses to produce the Soviet-designed YAK-12M utility plane and the Mi-1 helicopter. The Polish aviation industry's success in manufacturing foreign-designed aircraft is best exemplified by WSK-Mielec becoming the world's sole source for the Soviet-designed An-2 Colt utility biplane. Jerzy Cynk, official historian of the Polish Air Force Association, notes that the Polish aviation industry was a leader within the Warsaw Pact, producing 10,000 aircraft from 1950 to 1970.<sup>21</sup>

Despite its strength in the midst of the Communist era, the Polish aviation industry at the end of Communist rule was adept only at building variants of Soviet designs and selling its wares to a captive Warsaw Pact market. These inefficient aviation plants survive, dependent on nationalization. The plants probably cannot support the extensive, present-day modernization of the Polish air force at a reasonable cost.

### **Poland's Air Force Today**

Poland's air force merged with the air-defense forces after the end of the Cold War to form the *Wojska Lotnicze i Obrony Powietrznej* (WLOP), or air and air-defense forces.<sup>22</sup> This new structure established a more simplified command and control (C<sup>2</sup>) system for homeland defense. The WLOP encompasses air forces, air-defense forces, and early-warning radar forces. The bulk of the WLOP force counters airborne attack. The 2d Corps covers the northern section of Poland, while the 3d Corps covers the south. Each is independent of the other's fighter and bomber units, missile units, C<sup>2</sup> forces, and logistics support. Commander-in-chief of the WLOP, Lt Gen Andrzej Duleba, is responsible for protecting Poland from air attack and protecting "regrouping forces, convoys, and sea bases."<sup>23</sup>

As of 1 January 1999, 43,000 soldiers—of whom 17,200 were professionals—filled the ranks of the WLOP.<sup>24</sup> The force structure includes 282 combat aircraft, 146 trainer aircraft, 95 troop helicopters, 38 air-defense missile units, and 260 mobile radar stations.<sup>25</sup> The WLOP's inventory of Soviet-combat aircraft testifies to its former Warsaw Pact membership. The most advanced fighter is the MiG-29 Fulcrum, an all-weather, medium-range, air-to-air fighter. The MiG-21 "Fishbed" is a light fighter-interceptor; however, the WLOP uses the Fishbed only for pilot training and will retire it in the near future.<sup>26</sup> The WLOP flies the Su-22 fighter-bomber in air-to-ground missions. All combat aircraft entered the WLOP inventory in the 1980s except the MiG-21, which first appeared in the 1960s. In addition to combat fighters, the WLOP also flies jet and turbo-prop trainers and transports.

Even under an improved organizational structure combining air and air-defense forces, the WLOP marginally meets its mission of homeland air defense. More importantly, obsolescence and lack of interoperability prevent the WLOP from contributing significantly, if at all, to NATO operations across the operational spectrum from deterrence to precision air strikes. Even the most advanced fighters, the MiG-29 and Su-22, require basic global positioning system (GPS) and identification, friend or foe (IFF) upgrades before NATO can even consider them potential assets.<sup>27</sup> On top of that, training on these aircraft is discouragingly low. In 1999 Polish pilots averaged only 55 training hours per year, compared to the NATO standard of 180 hours annually.<sup>28</sup>

The condition of Poland's political, economic, and military affairs in 1989 foretold that air force modernization would not happen in a matter of months or even years but perhaps in a matter of decades. However, the Poles staunchly pushed forth with reforms despite a lack of precedence for transforming a Communist, Warsaw Pact country into a democratic, NATO country.

### **Success: Creating the Basis for National Defense**

Poland's governments from the end of the Cold War to the present have never doubted the necessity of becoming a NATO member. In an unprecedented show of solidarity, nearly the entire gamut of Polish political parties supported the ratification of the NATO membership treaty in 1999.<sup>29</sup> Polish citizens also supported NATO accession with a 72-percent approval rating as of January 1996.<sup>30</sup> Working toward a goal of NATO integration, presidents as diverse as right-of-center Lech Walesa and leftist Aleksander Kwasniewski supported democratic reforms leading to an improved civil-military relationship.

### **Underlying Documents**

After considerable debate, President Kwasniewski signed his country's governing constitution on 16 July 1997.<sup>31</sup> This document closed the chapter on Communism and opened

the door to democracy. The new constitution establishes freedoms such as those found in the US Bill of Rights: freedom of speech, freedom of religion, and the right of assembly. From the military perspective, Poland's constitution defines the powers of the president over the military. The democratically elected president holds the position of supreme commander of the armed forces in peacetime and executes this function through the minister of defense (MOD). The president also appoints a prime minister. In times of war, the president names a supreme commander of the armed forces with the recommendation of the prime minister. However, the prime minister rather than the president names the cabinet, or council of ministers, including the MOD. The council of ministers is important because it formulates the annual government budget, including that of the defense ministry. The legislative body of Poland's republic is a democratically elected parliament made up of the lower body, or *Sejm*, and the upper body, Senate. This body formulates laws for the military, such as legislation governing the length of service of conscripts. These elected officials provide legislative checks and balances normal to a democracy.

One of the newest documents underpinning government reform is the *Security Strategy of the Republic of Poland* adopted on 4 January 2000. This document replaced the *Tenets of the Polish Security Policy* and *Security Policy and Defense Strategy of the Republic of Poland* from (Security Strategy) 1992. These documents were sorely in need of replacement because they did not reflect Poland's NATO membership. Their emphasis was on the solitary defense of the homeland versus the collective defense found under the NATO umbrella. This updated *Security Strategy* recognizes that Poland has no external threat and focuses on the doctrine of defense with a small standing army versus the Communist doctrine of offensive mass with a large army. The document also recognizes global threats such as the proliferation of weapons of mass destruction, economic threats, terrorism, refugee flow, environmental disasters, and regional conflicts, especially from its neighbors to the east.

Although Poland reserves the right to maintain its sovereignty and territorial integrity, it links its own security to the NATO alliance and the European community. The *Security Strategy* outlines Poland's desire to integrate with

NATO via “active participation in developing the Organization’s political and strategic decisions and full military integration.”<sup>32</sup> The *Security Strategy* also calls for the government to maintain, restructure, privatize, and modernize its national-defense industry in order to accomplish “full integration.”<sup>33</sup> Additionally, stressing the need for a stable system for planning and financing the procurement of weapons systems similar to the US Department of Defense’s Planning, Programming, and Budgeting System, today Poland lacks such a system. The process described in the *Security Strategy* is based on a six-year program that will “render the forces interoperable, as soon as possible, with NATO structures, and to gradually bring them up to the alliance’s organization and technological standards.”<sup>34</sup> Ten years after the Cold War, the underlying constitution and security strategy mark Poland as a democratic nation with a modern military doctrine.

### **Poland’s Civil-Military Relationship**

Given the politicization of the military under the former Communist regime, the democratic Polish government felt compelled to reform its civil-military relations as early as possible to gain acceptance into NATO. Civilian control of the military is important in establishing strategic security goals that reflect the interests of the newly democratic country and provide the budget necessary to achieve those goals. Civilian control provides stability and legitimacy to military actions and defense.

Although the 1997 constitution provides the guiding structure for presidential responsibilities, it does not outline authoritative responsibilities of other civilian positions such as the MOD. In addition, political and military cultures historically prevented sound civil-military relationships. Civil-military control is an old problem that dates back to the 1920s.<sup>35</sup> In the recent past, confusion reigned as leaders tried to untangle the incongruity of the responsibilities of the ministry of defense, who answers to the *Sejm* and the responsibilities of the president, who is the supreme commander. In 1994 matters between then-Pres. Lech Wałęsa and *Sejm*-supported MOD Piotr Kolodziejczyk flared as they both vied for direct control of the military.<sup>36</sup> A serious crisis ensued and resulted

in the fall of Prime Minister Wlademar Pawlak and his government. The ascent of leftist President Kwasniewski produced a more consolidated approach to civil-military control. Although his government passed the Law of the Office of Defense Minister in 1996, civil-military relations remain an ongoing problem.<sup>37</sup> As late as September 2000, Defense Minister Bronislaw Komorowski railed against the lack of necessary laws to “conclusively resolve” the problems of “the overall command of defense.”<sup>38</sup>

The relationship between the MOD and the chief of the general staff has also traveled a rocky road and remains unresolved. In the early 1990s, reform of the civil-military relations resulted in separation of the civilian and military branches of the defense ministry.<sup>39</sup> This separation led to a struggle between the chief of the general staff and the MOD as to where command functions lie. The current chief of the general staff Brig Gen Czeslaw Piatas believes the law is in his favor and defines his roles as commander of the armed forces on behalf of the MOD. On the other hand, Defense Minister Komorowski believes he commands the armed forces through the chief or with his assistance.<sup>40</sup> Whether the general staff is a planning organization, as the defense minister believes, or a command organization as the chief believes, the debate is a distraction from pressing military issues such as air force modernization.

The final piece in the civil-military relationship puzzle is the *Sejm*. As a democratically elected legislative body, the *Sejm* should support a stable, realistic, long-term defense policy through its National Defense Committee. Instead, the *Sejm* has left military direction to the MOD.<sup>41</sup> In late 1999, *Sejm* speaker Maciej Plazynski blamed previous *Sejms* for relying on either the ministry of defense or the Polish general staff to draft all defense-related laws.<sup>42</sup> This is a worrisome sign, showing its lack of maturity and parliamentary expertise about military issues.

## **Disappointment: The Long Road to Air Force Modernization**

Despite the radical changes within the political structure accommodating the NATO partnership, Poland’s air force has

not changed much in the past decade. Although Poland promised NATO it would modernize much of its air and air-defense forces, the defense budget currently does not support such an ambitious program. Despite Poland's search for creative ways to obtain modern aircraft without breaking its meager budget, the end of the road in 2001 was not in sight.

### **The Defense Budget: Room for Modernization?**

Facing overwhelming odds, Poland's economy has grown at a comfortably impressive rate of approximately 5 percent annually since its transformation from central control to free market.<sup>43</sup> Poland has made great progress in growing a vibrant economy due in part to the shock-therapy treatment also known as the "Economic Transformation Program," led by Finance Minister Leszek Balcerowicz in the early years of the new Polish Republic. Under this program, the Poles painfully stabilized the ex-Communist economy and introduced market-driven mechanisms.<sup>44</sup> Also during this time, the Poles focused on reforming domestic matters such as health care, education, social security, and the transportation infrastructure instead of addressing military modernization issues.<sup>45</sup> However, in an action that continues to drag the Polish economy down, the Polish state maintained control of many troubled industries such as the defense and steel industries. Politicians foresaw a much more politically unappealing outcome by privatizing these ailing economic sectors. For example, up to 18,000 defense-factory workers, or 28 percent, stand to lose their jobs under defense-industry privatization.<sup>46</sup> Until the Polish government divests itself of inefficient industries, it will continue to bolster them with money better used for air force modernization.

Although Poland enjoyed the fastest economic growth in the Central European region from 1995 to 1999, the growth has not been sufficient to fund air force modernization. In fact, the 2001 defense budget is only 1.95 percent of the gross domestic product—less than the 2 percent guidance specified in the "Strategy for the Defense of the Polish Republic" and recommended by NATO and less than the 3 percent target set by 1995 legislation.<sup>47</sup> Defense modernization

is an even more insignificant percentage of the total defense budget. For example, the 2000 defense budget targets only 10.7 percent of defense funds for modernization, including procurement and research and development (R&D).<sup>48</sup> Therefore, out of only \$350 million available for modernization, just \$52.4 million was earmarked for R&D.<sup>49</sup> Military pensions and personnel spending absorb the bulk of the budget. Pensions accounted for 26.6 percent, and personnel accounted for 32 percent of the total expected expenditures in the 2000 defense budget.<sup>50</sup>

During 2001 the chief of the general staff recognizes this budgetary constraint but does not advocate further reduction in troops to fund modernization programs. He did not want to cut below 150,000 soldiers—the minimum number needed to fulfill the armed forces' NATO and domestic security goals.<sup>51</sup> Raiding the military pension funds to bolster modernization funding would be political folly as well.

In comparison to military expenditures of other NATO countries, Poland's per capita expenditure ranks near the bottom. In 1998, Poland spent less than half per capita on military expenditures than Spain, a NATO country of roughly the same population. Poland ranks between the other two new NATO members from Eastern Europe—the Czech Republic and Hungary—for military expenditure per capita. Considering Poland must not only maintain but also modernize its forces, its defense budget is very lean in contrast to other NATO countries.

### **Poland's Defense Industry**

A thriving in-country defense industry could fuel modernization of Poland's air force. An efficient, productive defense industry is important in many respects. First, foreign companies seeking to sell modern aircraft to Poland would have more flexibility and options to partner with internationally competitive Polish defense contractors if the Poles boasted such qualifications as contemporary tooling and computerized work planning. These options run the gamut of cooperation in contractor/subcontractor relationships and R&D partnering, to a license agreement allowing Polish aircraft manufacturers to produce foreign-designed aircraft in Poland. For years Poland's defense contractors have

successfully produced foreign-designed weapons systems. For example, Poland manufactured many Soviet-designed weapons systems, including the T-72 tank and the An-2 aircraft.<sup>52</sup> However, the British have more recently been at the forefront of Western countries instituting some of these partnering concepts. The *Polskie Zakłady Lotnicze* (PZL) aviation plant in Mielec, Poland, produces parts for the British Aerospace Hawk jet-trainer.<sup>53</sup> One of the Polish army's primary procurements, a 155-millimeter self-propelled howitzer, will be manufactured under license in Poland but will be based on the British AS90 Braveheart's design.<sup>54</sup> In 2001 Defense Minister Komorowski had invited Britain and all other interested countries to partner with Polish industry by licensing a foreign design for a modern wheeled armored fighting vehicle (AFV) to be manufactured in Poland.<sup>55</sup>

Poland must modernize its aircraft industry to successfully compete in the international marketplace. In 1996, 31 of 90 Polish factories producing defense articles formed the core of the organic industrial base.<sup>56</sup> More importantly, in 2001 only six companies currently meet world technology standards.<sup>57</sup> The Polish Council of Ministers recognized the need to upgrade these outdated facilities and their manufacturing processes by supporting the Defense and Aircraft Industry Transformation Program: 1996–2010.<sup>58</sup> The Defense and Aircraft Industry Transformation Fund, established by the program of the same name, provided financing for factory and process modernization. Its intent was to kick-start the aircraft industry out of the vicious cycle of not attracting customers because of its inefficiency, which generated no income to update factories to attract new customers. It is unclear whether this fund benefited Poland's aircraft industry, since as late as 1999, high pressure was on the Polish government and ministry of defense to create another national defense industry fund and to award military modernization contracts to indigenous defense plants. For example, the Solidarity and All-Poland Alliance of Trade Unions orchestrated defense industry labor strikes calling for increased government orders for Polish-produced arms and denouncing the government's "lack of support for defense plants."<sup>59</sup> In addition, two-thirds of Poland's defense plants were deeply indebted, owing more than \$245 million.<sup>60</sup> A major aviation

plant, PZL-Mielec, declared bankruptcy in 1998 and received \$10 million in new capital from the Polish government to continue operations.<sup>61</sup>

Ministry of defense leadership is acutely aware of the urgency to transform not just the aviation industry but also the entire defense industry into a competitive sector of the Polish economy. In 1999 then-Defense Minister Janusz Onyszkiewicz stressed restructuring and privatization as keys to a viable Polish defense industry. However, the initial pain of privatization has rendered the minister's actions ineffective. Not impervious to political pressure, Onyszkiewicz personally visited a firearms plant in central Poland in 1999 to deliver the news of a contract award to the Lucznik steel firm versus a foreign company.<sup>62</sup> However, the steel firm had been struggling financially for some time. This contract may merely prolong the government lifeline to an unhealthy company that's virtually "hanging on by a thread."

Fear of privatization is hindering the aviation industry's conversion to a modern industry. Unlike many of the small to midsized companies the Polish government and the international community helped transform to privately owned entities, the aviation industry remains in the shadow of the Communist era as a state-controlled entity.<sup>63</sup> The state provides a sustaining lifeline to these companies, exemplified by the \$10 million government bailout of PZL-Mielec. Production orders generated by Poland's aircraft-modernization program will unlikely generate enough business to keep all the aviation plants alive. At the height of the Cold War, Poland's aviation industry approached an output of 1,000 aircraft per year.<sup>64</sup> However, after the collapse of its Warsaw Pact trading partners and a decrease in defense spending around the world, Poland's aviation industry could no longer successfully compete in the global aviation market.

In late 1999 the Polish government took its first step to privatize the aviation industry when it passed two laws. The first law supports defense industry privatization, while the second law, enacted on 10 September 1999 and known as the Offset Act, supports offset requirements for foreign military-equipment purchases.<sup>65</sup> The first law allows defense companies to write off privatization costs. In addition, it targets government profits from the sale of defense plants to

fund R&D, promote Polish weapons systems to foreign markets, and procure modern Polish-made weapons systems. The law is not a fire sale—the government is planning to maintain ownership of seven defense plants.<sup>66</sup> Despite existing legislation to ease the Polish defense industry's privatization, neither the government nor the defense industry has made any substantial progress. The *Sejm*'s defense committee is worried that up to 80 percent of Polish defense workers could retire, retrain, or simply become unemployed due to restructuring.<sup>67</sup> Once the Polish government and the defense industry deal with the initial pain and the surviving plants are competitive and capable, the defense industry's future will be secure.

The Offset Act directly generates contracts for the defense industry. It requires foreign companies entering into military supply and equipment contracts with Poland to also enter into contracts to provide offsets at least equal to the value of the original contract to the Polish defense industry or other Polish industry.<sup>68</sup> The act applies to contracts worth more than five million Eurodollars.<sup>69</sup> Poland awarded its first offset contract in November 2000—probably a result of the law's direct benefits to the defense industry and the relative ease of enforcement.<sup>70</sup>

## Air Force Modernization Plans

The lack of modernization funds and a healthy defense industry require the defense ministry to develop a coherent plan to best use its limited assets. Shortly after political reform, Polish leaders adopted a string of reform packages to guide the structure and priorities for the military. *Structure 1992* and *Armed Forces 2010* attempted to set policy and targets for military reform.<sup>71</sup> However, they were unrealistic in their scope and thus, not widely accepted. Next came *Army 2012: The Foundation of the Modernization Program for the Armed Forces 1998–2012 (Army 2012)*.<sup>72</sup> This document divided priorities for modernization and acquisition into 11 categories, including aircraft and helicopters and also guided changes to the budgetary process and the defense industry.<sup>73</sup> Eventually the government expanded *Army 2012* to include 65 NATO target-force goals of 1998.<sup>74</sup> However, the Poles

were too optimistic with their forecasted defense budgets and *Army 2012* seemed to be in a coma, if not dead. In early 2000, the Defense Affairs Committee of the council of ministers determined the *Army 2012* goals for 2000 were too ambitious and the defense budget too small to fund many of the projects.<sup>75</sup>

Despite the problems with *Army 2012*, the Poles have not given up formulating modernization plans. The latest modernization plan as of 2001 was *The 2001–2006 Program for the Development of the Armed Forces* (Six-Year Plan). Using *A Strategy of Public Finance and Economic Growth for Poland in 2000–10* as a financial foundation, this plan covers the years 2001–06 and is in step with a similar NATO plan to meet additional NATO target-force goals.<sup>76</sup> The Six-Year Plan prioritizes requirements, establishes milestones, programs resources to meet objectives, and provides guidance for modernization of the armed forces. Among the designated projects are multirole fighters, data-link and satellite communication, strategic airlift, and computer-aided exercise capability.<sup>77</sup> In 2001 Defense Minister Komorowski characterized the plan as “allowing us to stop dreaming and start real life.”<sup>78</sup> This plan stands out from former defense plans thanks to an unprecedented associated law to guarantee funding for the program’s entire six years instead of one year at a time.<sup>79</sup> However, given the fiscal realities of austere budgets, out-year funding must be substantial if the Six-Year Plan is to become more useful than discarded plans of the past.

### **Air Force Modernization Alternatives**

Poland’s air force modernization program is a reflection of the military, economic, and political realities discussed to this point. Militarily, to fulfill Poland’s desire to recapture the pride of its early air force days and to hold its head high among the ranks of NATO nations, air force modernization is a must. The Poles retired the minimally capable MiG-23 in 1999, and the MiG-21 is slated for retirement.<sup>80</sup> Additionally, the Su-22 and the MiG-29 require modernization to compete on today’s battlefield. The Poles promised NATO they could supply NATO-compatible fighters for the NATO rapid reaction force by 2003.<sup>81</sup> Although Edgar Buckley, chairman of

NATO's Defense Review Committee, applauded Poland for its "complete" political integration into NATO, he stressed the country has a long way to go before military integration is satisfactory.<sup>82</sup> Gen Joseph Ralston, NATO Supreme Allied Commander Europe in 2001 communicated directly to the Polish leadership his concern that defense spending is "too low" to properly modernize the armed forces.<sup>83</sup>

Economically, Poland's desire to participate in NATO's doctrine of engagement at all levels of conflict is limited by its shoestring budget. Therefore, Poland's air force must use creative, relatively inexpensive methods to jump-start its modernization process such as loans, credit, leasing, offset manufacturing, and surplus weapons. Some of the new methods are already being integrated into the Polish air force's sister services. In June 2000, the United States delivered one of two surplus *Oliver Hazard Perry*-class guided missile frigates to the Polish navy; the frigate is the first navy vessel to be fully compatible with NATO.<sup>84</sup> The United States granted the Poles the ships according to the Foreign Assistance Act of 1961.<sup>85</sup> In addition, Germany has offered to lease its Leopard tanks to the Polish army.<sup>86</sup> Lastly, the Polish navy has been searching for a couple of secondhand submarines to replace its obsolete *Foxtrot*-class subs. France, Germany, the Netherlands, and Sweden are potential sources for the submarines.<sup>87</sup>

In its attempt to inexpensively procure modern, maintainable fighter aircraft, the ministry of defense in 2001 planned to lease fighters from another country as an interim solution until funds to procure technologically advanced aircraft such as the Joint Strike Fighter are available. Leasing is an effective way to attain capability quickly with little up-front cash. But, depending on the terms of the lease, leasing is usually more expensive over time than outright purchasing. The Poles were not always contemplating leasing. The Polish government gave the legal affirmation to begin full-scale modern, multirole aircraft procurement as early as 1995.<sup>88</sup> However, funding to support this political decision never materialized. Promises of a shiny new Polish air force melted away under a stream of rhetoric as yearly attempts to procure a new fighter force failed due to lack of funding.

The Poles are attempting to pull together an interim air force that will meet NATO demands until 2012, when the purchase of the latest-model fighter is more economically realistic. The first step in this process keeps Su-22 and MiG-29 aircraft flying and makes them interoperable with NATO. In September 2000, WLOP commander General Duleba announced the WZL-2 depot in Bydgoszcz would manage a structural-life-extension program for 98 Su-22s to keep them flying until 2015.<sup>89</sup> Part of the Su-22 force may undergo expensive upgrades to its avionics, communications, data link, radar, and munitions capabilities. WZL-2 has also upgraded approximately half the MiG-29 fleet with IFF and GPS equipment. Germany's DaimlerChrysler Aerospace offers a state-of-the-art radar, fire-control, electronic warfare and life-extension program for the MiG-29.<sup>90</sup> However, the program is potentially cost prohibitive for the Poles, who are merely trying to keep their jets in flyable condition.

Besides hanging on to their MiG-29 and Su-22 capability, the Poles are contemplating filling out their fighter force with 12 to 16 Western jets using a lease concept. The two front-runners in this competition were surplus F-16 A/B model aircraft from Lockheed-Martin and the JAS-29 *Gripen* from a British Aerospace/Saab concern. The ministry of defense originally set the cost of the lease at \$72.5 million just for the year 2001.<sup>91</sup> However, the *Sejm* included only \$24.2 million in the 2001 budget to initiate the multirole fighter's lease.<sup>92</sup> "Inexpensive" alternatives such as leasing or accepting surplus weapons systems usually have hidden costs in the required infrastructure to support these weapons systems, as well as in training, facilities, and logistics. Reportedly, the F-16 lease offered the actual airframes at no cost; however, refurbishment and pilot/maintenance training costs could reach \$250 million over five years.<sup>93</sup>

Politically, air force modernization is a divisive issue within the Polish government. Finger-pointing, favoritism, and false starts surround the interim fighter-selection process. Because Poland does not have an established acquisition process, politicians heavily influence the bidding. For example, Defense Minister Komorowski in 2001 declared the F-16 offer as the only one being considered by the Polish government.<sup>94</sup> A radical leftist political weekly, *Nie*, grumbled the defense minister was planning to "trick its

European partners" by "luring them with bids and civilized procedures whilst quietly settling a deal with the United States."<sup>95</sup> As such, the government was lining up on opposing sides: The SLD and the president favored the *Gripen* while the ministry of defense favored the F-16.<sup>96</sup>

Other political influences on an interim fighter lease come not from within Poland but from without. As a member of the EU, Poland may be forced to maneuver within the constraints of a common European defense procurement agency, similar to the already-established *Organisme Conjointe de Cooperation en Matiere d'Armament*, or OCCAR, whose members are France, Germany, Italy, and Britain.<sup>97</sup> The EU may affect the fighter competition before Poland is even a member. In 2001 Prime Minister Jerzy Buzek confirmed that a decision on the interim fighter-aircraft purchase would take EU accession negotiations into account.<sup>98</sup> Sweden, who was offering the JAS-29, coincidentally held the EU presidency for the first half of 2001.

Military realities of an aging fighter force, the economic realities of an empty defense budget, and political infighting as well as contractual restrictions to aid the defense industry keep the White Eagle from rising to become a respected power on the battlefield. Poland was quick to recognize the need for modernization but has been slow to implement the difficult solutions that are necessary.

## Conclusion

Poland dreams of becoming a strong NATO partner politically, economically, and militarily. However, its attempts have met with more disappointments than successes. The Polish people set out early to become a strong NATO member and, politically, they have succeeded. The 1997 constitution reflects the desires of the country to become a contender in the Western democratic arena. Despite ongoing differences between the ministry of defense and the general staff, the Polish government created a sound civil-military relationship whereby the defense minister and president guide the military.

However, Poland has not become a strong modern military partner in NATO with a solid defense budget to support that strength. The force structure of the armed forces, the air

force in particular, is deteriorating under a series of plans that are too ambitious and lack a stable defense budget. The current Six-Year Plan is a concerted effort for the Polish government to finally make good on its promises to modernize the air force. Yet, the 2001 budget is lower than previous years and indicates the Six-Year Plan may end up as an overly ambitious plan that is eventually discarded. State control of the plodding, burdensome military-aviation industry is dragging down a sector that, if forced to privatize, could emerge as a self-sufficient, income-producing industry. To compensate for disappointments in the slow progress made toward increasing the budget for modernization of the air force, Poland is looking for innovative ways to make the best of the situation. They are investigating economical ways to modernize the air force such as leasing an interim modern-fighter capability.

There are many long-term implications for Poland's successful reform and modernization. For the first time in many years, Poland's future seems secure and free from threats of invasion or external political control. A reformed and modern Polish air force will further stabilize the Eastern European region if neighboring countries judge Poland capable of adequate homeland defense. In addition, Poland's air force will gain respect within NATO as a contributor, not as an ineffective air force. The Polish success with military, economic, and political reform will legitimize acceptance of former Warsaw Pact countries into NATO. Using the Polish experience as a template, the next group of candidates for NATO may then vicariously learn of promising programs as well as potential pitfalls of realigning with NATO and Western democracies. In the end, Poland must be honest with itself, its people, and NATO about what reforms and modernization it can accomplish quickly. If not, it will gain a reputation of "empty promises" from which it may never recover.

The seemingly speedy demise of Communism was actually a result of several decades of Cold War realities. Likewise, the seemingly speedy incorporation of Poland into NATO may be followed by years, if not decades, of continuing military and economic reform to bring Poland to the level of NATO partnership that it dreams of.

## Afterword

On 27 December 2002, Poland took a giant step forward toward the modernization of its air force by announcing its intent to sign a contract to purchase 48 F-16 aircraft from the US manufacturer Lockheed Martin Corporation. In this single, surprising move, Poland overcame two important hurdles blocking their advanced fighter buy; first, a \$3.8 billion US loan provided the cash to finance the replacement F-16s for Poland's aging MiG fighters, and second, Lockheed Martin designed its team around Polish subcontractors, suppliers, and developers, thus allowing a large financial offset back to the Polish economy.

On 18 April 2003, the Polish government signed a \$3.5 billion contract, sealing their unprecedented rapid leap forward to modernize its air force and become a true contributor to NATO and its Western allies. This is an amazing leap forward given the status of the Polish air force modernization at the time of this paper's original writing. For additional information, see (Leslie Wayne, "Polish Pride, American Profits," [www.nytimes.com](http://www.nytimes.com), 12 January 2003; and Tribune News Services, "Deal Struck to Buy F-16s for \$3.5 Billion," *Chicago Tribune*, 19 April 2003).

### Notes

1. Andrew A. Michta, *The Soldier-Citizen: The Politics of the Polish Army After Communism* (New York: St. Martin's Press, 1997), 33.
2. Jerzy J. Wiatr, *The Soldier and the Nation: The Role of the Military in Polish Politics, 1918-1985* (Boulder & London: Westview Press, 1988), 118.
3. Frances Millard, *The Anatomy of the New Poland: Post Communist Politics in Its First Phase* (Cambridge, England: University Press, 1994), 56.
4. *Ibid.*, 62.
5. Wiatr, *Soldier and the Nation*, 33.
6. Millard, *Anatomy of the New Poland*, 27.
7. *Ibid.*, 115.
8. Dale R. Herspring, "Civil-Military Relations in Post-Communist Poland: Problems in the Transition to a Democratic Policy," *Communist and Post-Communist Studies* 33, no. 1 (March 2000): 72.
9. Eugeniusz Jendraszczak, "The Structuring of the Polish Armed Forces in a Defensive Strategy," *The Journal of Slavic Military Studies* 8, no. 4 (December 1995): 757.
10. Wiatr, *Soldier and the Nation*, 108.
11. Michta, *Soldier-Citizen*, 33.
12. Wiatr, *Soldier and the Nation*, 175.
13. Millard, *Anatomy of the New Poland*, 24.

14. Ibid., 27.
15. Leszek Balcerowicz, "Poland's Transformation," *Finance and Development* 37, no. 3 (September 2000): 16.
16. Jerzy B. Cynk, *History of the Polish Air Force 1918–1968* (Reading, England: Osprey Publishing Ltd., 1972), 3.
17. Ibid., 5.
18. Jerzy B. Cynk, "Dedication and Motivation: 80 Years of Poland's Air Force," *Air Pictorial* 61, no. 3 (March 1999): 148.
19. Cynk, *History of the Polish Air Force*, 39.
20. Ibid., 242.
21. Ibid., 246.
22. Cynk, "Dedication and Motivation," 150.
23. *The Armed Forces of the Republic of Poland*; CD-ROM (Warsaw: Bellona Publishing House, 1999).
24. Ibid.
25. Ibid.
26. Gen Czeslaw Piatas, interviewed by Radio Zet, 24 January 2001, in *FBIS [Foreign Broadcast Information Service] Report: East Europe*, EUP20010124000116, 5 March 2001, n.p.
27. LTC (P) Peter Podbielski, chief, Office of Defense Cooperation, Warsaw, Poland, telephone interview by author, 8 February 2001.
28. Dr. Paul Latawski, *The Transformation of the Polish Armed Forces: Preparing for NATO* (London: The Royal United Services Institute for Defence Studies, 1999), 49.
29. "Poland's Buzek: Main Political Forces Back NATO Entry," *Polish News Agency PAP*, 11 March 1999, in *FBIS*, FTS19990311001844, 11 March 1999, 1.
30. *Polish Attitudes Toward Poland's Integration with NATO: Findings based on CBOS Polls, 1993–1996*, 1997, 1; 1 March 2001, [http://www.msz.gov.pl/english/nato/cbos1993\\_1996.html](http://www.msz.gov.pl/english/nato/cbos1993_1996.html).
31. *Poland's 1997 Constitution: Summary of Key Provisions*.
32. *Security Strategy of the Republic of Poland*, 4 January 2000, 8; 19 January 2001, <http://www.msz.gov.pl/english/polzagr/security/se3.html>.
33. Ibid.
34. Ibid.
35. Joseph Rothschild, *Pilsudski's Coup d'Etat* (New York: Columbia University Press, 1966).
36. Herspring, "Civil-Military Relations in Post-Communist Poland," 92.
37. Andrew A. Michta, *America's New Allies: Poland, Hungary, and the Czech Republic in NATO* (Seattle: University of Washington Press, 1999), 50.
38. Bronislaw Komorowski, "I Am Fighting for a Good Program," *Polska Zbrojna*, 22 September 2000, in *FBIS*, EUP20000922000424, 1 March 2001, 16–18.
39. Michta, *America's New Allies*, 51.
40. Krystyna Romanowska, "A Tanker and a Humanist," *Zycie*, 24 November 2000, in *FBIS*, FBIS-EUP20001124000393, 7 February 2001, 4–8.
41. LTC (P) Peter Podbielski, chief, Office of Defense Cooperation to author, e-mail, subject: AFSC RFI Response, 5 February 2001.
42. "Sympathy Instead of Empty Promises," *Polska Zbrojna*, 24 December 1999, in *FBIS*, FTS20000105001138, 1 March 2001, 3–6.

43. Podbielski interview.
44. Balcerowicz, "Poland's Transformation," 14.
45. Podbielski interview.
46. Dr. Eugene Kogan, "Polish Defense Industry: Slow-motion Shakeup," *Interavia* 56, no. 649 (January 2001): 17.
47. "Trybuna 29.12," 2 February 2001, <http://www.wp.mil.pl/english/news>.
48. Ministry of National Defence (MoND), *Basic Information on the MoND Budget for 2000* (Warsaw: Ministry of National Defense Press and Information Office, 2000), 13.
49. <http://www.xe.com>; used to convert zloty currency to US dollars. On 17 March 2001 the exchange rate was \$1 US = 4.14 zloty. Original figures were 1.46 billion zlotys and 217 million zlotys, respectively.
50. *Basic Information on the MoND Budget*, 14.
51. Maria Wagrowska and Janusz Grochowski, "A Difficult Balance," *Polska Zbrojna*, 14 November 2000, in FBIS-EUP2001114000282, 14 November 2001, 5-7.
52. *Ibid.*
53. Leszek Zmijewski, "New BAe Contract for Mielec," *The Warsaw Voice*, 24 October 1999, 7 October 2000, <http://www.warsawvoice.com.pl/v574/Busi05.html>.
54. Wojciech Luczak, "Stop Dreaming and Start Real Life," *Military Technology* 24, no. 8/2000 (August 2000): 23.
55. *Ibid.*
56. Elzbieta Firlej et al., *Estimated Cost of NATO Enlargement: A Contribution to the Debate*, 17 January 2000, <http://www.polishworld.com/polemb/nato/end.html>.
57. Zofia Sobiepanek, *Defense Modernization*, US Dept. of Commerce: Market Access and Compliance, 1 March 2000, <http://www.mac.doc.gov/eebic/countryr/poland/market/defense.htm>.
58. Firlej et al., *Estimated Cost of NATO Enlargement*.
59. "Solidarity, OPZZ Launch Protests over Defense Industry," *Polish News Agency PAP*, 5 May 1999, in FBIS-EEU-1999-0505, 6 May 1999, 1.
60. Michta, *America's New Allies*, 66.
61. Kogan, "Polish Defense Industry," 18.
62. "Polish Defense Minister: Army to Use Polish Weapons," *Polish News Agency PAP*, 14 October 1999, in FBIS-EEU-1999-1015, 1.
63. United States General Accounting Office, *Poland: Economic Restructuring and Donor Assistance NSIAD-95-150* (Washington, D.C.: Government Printing Office, 1995), 48.
64. Cynk, *History of the Polish Air Force 1918-1968*, 246.
65. "Poland: Sejm Passes 2 Defence Industry-Supporting Laws," *Polish News Agency PAP*, 12 September 1999, in FBIS-EEU-1999-0912, 1.
66. "Poland Adopts Bills on Defense Industry Restructuring," *Polish News Agency PAP*, 22 June 1999, in FBIS-EEU-1999-0623, 1.
67. *Ibid.*
68. Grzegorz Holdanowicz, "Polish Air Bases to Get Radar Upgrade," *International Defense Review* 33, no. 11 (November 2000): 12.
69. Andrzej Szumanski, "Defence Offset in Poland," *Military Technology* 24, no. 8/2000 (August 2000): 35.

70. Holdanowicz, "Polish Air Bases to Get Radar Upgrade."
71. Latawski, *Transformation of the Polish Armed Forces*, 37–38.
72. Michta, *America's New Allies*, 51.
73. Latawski, *Transformation of the Polish Armed Forces*, 51.
74. Michta, *America's New Allies*, 51.
75. Z.L., "How to Spend NATO Funds?" *Rzeczpospolita*, 4 January 2000, in FBIS-EEU-2000-0104, 14 January 2000, A2.
76. Maj Ryszard Choroszy, "A Vision without a Picture," *Polska Zbrojna*, 24 December 1999, in FBIS-FTS20000105001138, 1 March 2001, 3–6.
77. Podbielski interview; and Luczak, "Stop Dreaming and Start Real Life," 21.
78. Luczak, "Stop Dreaming and Start Real Life," 21.
79. Lentowicz, "Antitank Cut," *Rzeczpospolita*, 11 December 2000, in FBIS-EUP200012130000161, 7 February 2001, A5.
80. LTC (P) Peter Podbielski, chief, Office of Defense Cooperation to author, e-mail, subject: Research Paper Review, 24 March 2001.
81. Grzegorz Holdanowicz, "Poland in Bid to Lease F-16s from USA," *Jane's Defense Weekly* 34, no. 16 (18 October 2000): 4.
82. "Poland: NATO Defense Committee Reviewing Progress of Military Reform," *Polish News Agency PAP*, 28 June 2000, in FBIS, EUP20000628000223, 1 March 2001, 1.
83. "NATO Commander says Polish Defence Modernization Spending Too Low," *Polish News Agency PAP*, 23 January 2001, in FBIS, EUP20010123000160, 5 March 2001, 1.
84. "Poland Seeks to Update Its Submarine Force," *International Defense Review* 33, no. 8 (August 2000): 4.
85. *To Authorize the Transfer of Naval Vessels to Certain Foreign Countries*, 106th Congress, 1st Session, H.R. 1908.
86. Lentowicz, "Antitank Cut," A5.
87. "Poland Seeks to Update Its Submarine Force," 4.
88. Luczak, "Stop Dreaming and Start Real Life," 23.
89. Grzegorz Holdanowicz, "Poland Extends Service Life of Fighter Aircraft," *Jane's Defense Weekly* 34, no. 10 (6 September 2000): 16.
90. John Fricker, "NATO Compatibility Needs Fuel Eastern European Upgrades," *Overhaul and Maintenance VI*, no. 7 (September 2000): 77.
91. Luczak, "Stop Dreaming and Start Real Life," 23.
92. TS, "Negotiations in the Shadow of Gripen," *Gazeta Polska*, 21 February 2001, in FBIS, EUP20010221000252, 1 March 2001, 6.
93. PW, "In Default of 100 Million Zlotys; F-16 Will Not Fly to Poland," *Gazeta Wyborcza*, 21 November 2000, in FBIS, EUP20001121000217, 14 February 2001, 5.
94. Robert Rochowicz, "The Loop," *Polska Zbrojna*, 12 November 2000, in FBIS, EUP20001113000044, 14 February 2001, 16–17.
95. Marek Baranski, "Government is Lying," *Nie*, 26 October 2000, in FBIS, EUP20001024000241, 1 March 2001, 1.
96. TS, "Negotiations in the Shadow of Gripen," 6.
97. Philip Butterworth-Hayes, "EU Common Defense Procurement Nears," *Aerospace America* (December 1999): 4.
98. TS, "Negotiations in the Shadow of Gripen," 6.